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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/917,749	07/31/2001	Yasutaka Ito	110575.01	2777

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EXAMINER

JEFFERY, JOHN A

ART UNIT	PAPER NUMBER
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3742

DATE MAILED: 03/11/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/917749

Applicant(s)

Hto

Examiner

Jeffery

Group Art Unit

3742

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☐ Responsive to communication(s) filed on _____.
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 11-28 is/are pending in the application.
- ☐ Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 11-28 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
- ☐ received in Application No. (Series Code/Serial Number) _____.
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) 6
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

Office Action Summary

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Ceramic Heater With Offset Electric Heating Elements in the Thickness Direction."

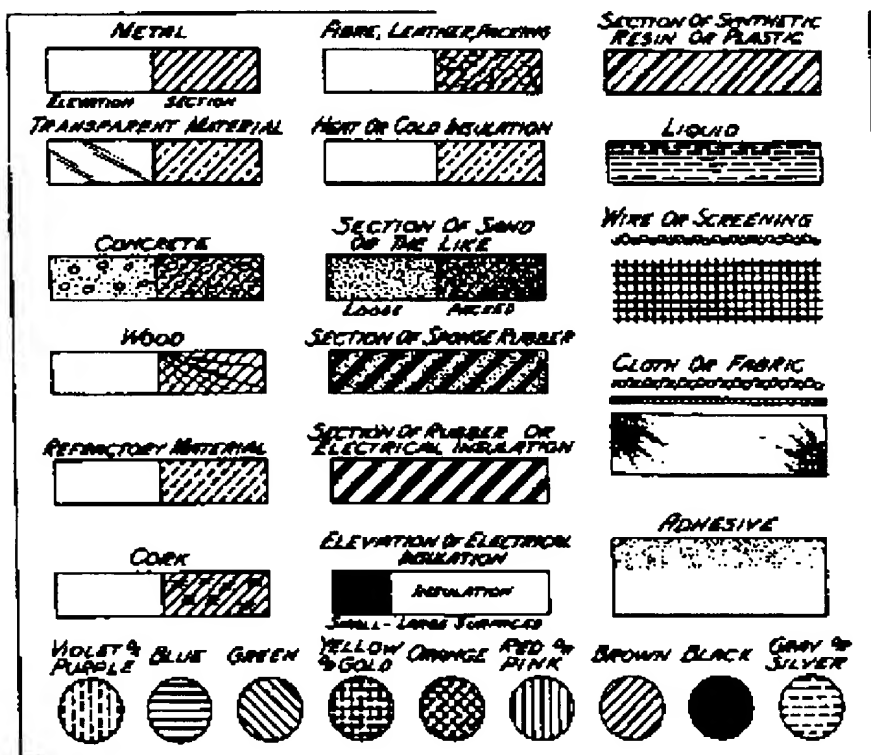
The drawings are objected to because of the following informalities:

Fig. 13: The figure must be labeled "PRIOR ART."

Fig. 1: The subfigure showing the enlarged portion must be given a separate figure label and provided with reference numerals.

Fig. 5-9 and 11: All subfigures must be given separate figure numbers (e.g., Fig. 5A, Fig. 5B, etc.). Applicant is reminded to amend the specification and Brief Description of the Drawings section accordingly in conjunction with the drawing changes.

Figs. 1-3, 5, 7-11, 13: Proper cross-sectional hatching is required to properly denote insulative materials in accordance with MPEP 608.02 (see the drawing below for proper hatching examples).



The response to this action must include a separate letter addressed to the examiner and contain: (1) sketches showing in red the drawing changes required above and (2) a request that the examiner approve the changes as shown on the sketches.

IMPORTANT NOTE: The filing of new formal drawings to correct the noted defect may be deferred until the application is allowed by the examiner, but the print or pen-and-ink sketches with proposed corrections in red ink is required in response to this office action, and *may not be deferred*.

The disclosure is objected to because of the following informalities:

All references to specific claim numbers in the specification must be deleted since the scope, content, and numbering of the claims can change during the course of prosecution (e.g., p. 7, lines 19, 23, etc.).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in—

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 11-13, 27, and 28 are rejected under 35 USC 102(e) as being anticipated by Kawanabe et al (US6133557). Note first heater 12 and second heater 13 disposed within ceramic substrate 11, the heaters being offset relative to each other in the thickness direction. See Figs. 5, 6, and col. 10, line 62 - col. 12, line 6.

Claims 11-13 and 26 are rejected under 35 USC 102(b) as being anticipated by Okuda et al (US5750958). Note first and second heaters 3, 4 offset in the thickness direction and embedded in ceramic substrate 1. See Figs. 1-3, 26. Regarding claim 26, note the distance W_n of Fig. 26 being disclosed as 0.8 mm in Table 9 (col. 38).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Claims 14-19 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawanabe et al (US6133557) in view of Kimura (US5331134). The claims differ from the previously cited prior art in calling for the maximum amount of offset displacement to be within a specified range. While Kawanabe et al (US6133557) does not expressly specify the amount of distance the heaters are displaced, offsetting electric heaters at a distance of 500 μ is conventional and well known in the art as evidenced by Kimura (US5331134) noting electric heaters 2, 2' which are offset from each other by the thickness of the ceramic substrate 1. As noted in col. 3, lines 41-42, the minimum thickness of the ceramic substrate is 0.5 mm (500 μ). As noted in col. 1, line 58 - col. 2, line 12, providing two offset heaters improves temperature uniformity over the whole surface of the heater. In view of Kimura (US5331134), it would have been obvious to one of ordinary skill in the art to offset the electric heaters at a 500 μ distance in the previously described apparatus so that the individual heaters were disposed in approximately the same horizontal plane thereby improving uniformity of heating. With regard to the claims which recite upper limits having lower values of offset, the chosen offset distance would be obvious to one of ordinary skill in the art given a desired heating pattern along the substrate surface. Given a certain tolerance for temperature deviations along the substrate surface, one of ordinary skill in the art would know to limit the offset between heaters to a specified amount to minimize such temperature deviation.

Claims 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawanabe et al (US6133557) or Okuda et al (US5750958) in view of Niori et al (US5280156). The claims differ from the previously cited prior art in calling for the heater to comprise a spiral wire. Providing a spiral wire embedded in a ceramic substrate is conventional and well known in the art as evidenced by Niori et al (US5280156) noting spiral wire 3. As is well known in the art, spiraling an electric heater provides numerous advantages over a straight electric heater including (1) maximizing heating element area per unit length of the heater by spiraling the heater, and (2) providing more flexibility in the heater

structure thereby accounting for thermal expansion. In view of Niori et al (US5280156), it would have been obvious to one of ordinary skill in the art to provide a spiraled electric heater in lieu of the electric heater structures of the previously described heaters in order to (1) maximize heating element area per unit length of the heater by spiraling the heater, and (2) provide more flexibility in the heater structure thereby accounting for thermal expansion expansion.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The art should be both separately considered and considered in conjunction with the previously cited prior art when responding to this action.

EP 593, US 972 disclose ceramic heaters with embedded electric heaters offset in the thickness direction. US 764, US 251, US 476 disclose gradually varying the distance of the embedded electric heater from the surface of the substrate in which the heater is embedded. US 168, JP 185, US 582, US 657, CH 931, GB 352, CH 615, FR 035 (Fig. 3) disclose planar heaters with embedded electric heaters offset in the thickness direction.

Any inquiry concerning this or earlier communications from the examiner should be directed to John A. Jeffery at telephone number (703) 306-4601 or fax (703) 305-3463. The examiner can normally be reached on Monday-Thursday from 7:00 AM to 4:30 PM EST. The examiner can also be reached on alternate Fridays.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0861.

A handwritten signature in black ink, appearing to read "John A. Jeffery", is written over a horizontal line.

JOHN A. JEFFERY
PRIMARY EXAMINER

3/7/02